Parents' Guide for Sixth Grade Mathematics

By the end of grade six, students have mastered the four arithmetic operations with whole numbers, positive rational numbers, positive decimals, and positive and negative integers; they accurately compute and solve problems. They find prime factorizations, least common multiples, and greatest common factors. They create, evaluate, and simplify expressions, and solve equations involving two operations and a single variable. They solve problems involving an unknown angle in a triangle or quadrilateral, and use properties of complementary and supplementary angles. Students know about π as the ratio between the circumference and the diameter of a circle and solve problems using the formulas for the circumference and area of a circle. Students analyze, draw conclusions, and make predictions based upon data and apply basic concepts of probability.

The following are specific skills students need to acquire by the end of grade six:

Number Concepts & Operations

- Recognize a rational number as a ratio of two integers
- Use exponents in standard and expanded form and in scientific notation
- Compare and order rational numbers, including positive and negative mixed fractions and decimals, using a variety of methods including the number line and finding a common denominator
- Find equivalent forms for common fractions, decimals, percents, and ratios, including repeating or terminating decimals
- Relate percents less than 1% or greater than 100% to equivalent fractions, decimals, whole numbers, and mixed numbers
- Recognize that the sum of an integer and its additive inverse is zero
- Classify whole numbers to 100 as prime, composite, or neither
- Write prime factorization of numbers to 100
- Find the greatest common factor and least common multiple for two numbers
- Give mixed number and decimal solutions to division problems with whole numbers
- Solve a multi-step problem involving multiplication and division of fractions and decimals
- Use estimation to determine whether result obtained using a calculator are reasonable
- Solve problems involving ratios and proportions
- Multiply and divide a multi-digit number by a two-digit number, including decimals
- Add, subtract, multiply, and divide fractions and mixed numbers
- Add and subtract integers

Patterns & Number Relationships

- Draw a graph and write an equation from a table of values and create a table of values from an equation
- Solve single variable linear equations
- Evaluate and simplify expressions and formulas substituting given values for the variable (e.g., $2x + 4$; $x = 2$; therefore $2(2) + 4 = 8$)

Geometry

- Identify the midpoint of a line segment and the center and circumference of a circle
- Identify angles as vertical, adjacent, complementary, or supplementary
- Solve problems involving an unknown angle in a triangle or quadrilateral
- Rotate a polygon about the origin by a multiple of 90° and identify the location of the new vertices
- Translate a polygon whether horizontally or vertically on a coordinate grid and identify the location of the new vertices
- Reflect a polygon across either the x- or y-axis and identify the location of the vertices

Measurement

- Use given formulas to calculate circumference of a circle, areas of polygons, surface area and volume of a cylinder
- Convert units of measurement within their system; metric or customary
- Compare a meter to a yard, a liter to a quart, and a kilometer to a mile

Statistics & Data

- Design the appropriate format to display data (e.g., line plots, bar graphs, line graphs, scatter plots, and circle graphs)
- Compare similar sets of data using varied graphs
- Recognize the effect of scale in displaying data
- Use data to make inferences and predictions
- Compare individual, small group results for a probability experiment and write the results as a fraction, ratio, and percent between zero and one